Reserve Program 38 Supports ONR

By Lt. Cmdr. Jay Bartish

During Fleet Week in May in New York City, the Office of Naval Research (ONR) showcased some of the Navy's newest and future technologies on board USS Kearsarge (LHD 3). Reserve Program 38 personnel assisted the ONR staff by explaining projects to guests touring the ship. The Reservists are members of ONR and Naval Research Lab units based around the country.

Each detachment is composed of naval officers who are typically warfare qualified and have advanced engineering or technical degrees. They serve as liaisons between ONR's mostly civilian staff of scientists and researchers and the warfighters in the fleet and force who serve at the pointy end of the spear.

The Fleet Week Reserve team included Cmdr. Anthony Nickens, Cmdr. Dan Pedro, Cmdr. Paige Terry, Lt. Cmdr. Jay Bartish, Lt. Cmdr. Eric Neumann and Lt. Cmdr. Heath Rasmussen. Projects exhibited during Fleet Week included those listed below.

The Revolutionary Approach to Time-critical Long Range Strike (RATTLRS) demonstration, led by ONR and supported by the Air Force, NASA and the Defense Advanced Research Projects Agency will create a new standard for time-critical strike weaponry. The end result will be a high-supersonic cruise missile capable of speeds greater than Mach 3 that can be launched from Navy and Air Force platforms, including surface ships, submarines and aircraft.

Coyote is a 36-inch long, 12-pound expendable unmanned aerial vehicle (UAV) designed to be deployed from sonobuoy launch tubes on Navy aircraft such as the P-3C Orion. The UAV has a digital camera and datalink that can relay real-time video back to the aircraft. It provides surveillance of contacts of interest or visual identification of radar contacts while an aircraft remains at altitude. After launch, Coyote deploys folded wings to maintain stability as it glides down in a spiral designed to keep an object of interest in view.

The Silver Fox is a small tactical UAV using off-the-shelf avionics. ONR's Tech Solutions office, which finds quick technology solutions for the Navy and Marine Corps, identified the UAV as a means to provide real-time imagery intelligence for Marines at the company and battalion level. The Silver Fox UAV was originally developed to assist the Navy in avoiding migrating whales while on maneuvers.

At 22 pounds, and roughly the size of a large remote-controlled model aircraft, it is a highly portable system that can be easily transported in a humvee. The entire system consists of three aircraft, a ground station and launcher. Once airborne, Silver Fox uses an infrared, high-resolution color zoom camera to relay reconnaissance information instantaneously to a remote laptop computer.

The UAV is made of composite and ceramic materials and is equipped with an automatic flight control system that can fly the UAV to user-defined waypoints; it does not require a dedicated operator. An on board datalink can transmit pictures back to Marines 20 miles away. The UAV has a flight endurance of 10 hours with a top speed of 55 mph. It can be recovered using a net, or can glide to land on the ground or water — and it floats.

The Lightweight Mortar System is a joint program with the Army's Armament Research Development and Engineering Center. The system uses modern materials and concepts to reduce the weight of an 81 mm mortar. The new system has a cannon made from a nickel superalloy called Inconel 718, which weighs about 10 pounds — 30 percent less than a steel tube. Inconel 718 offers superior strength during periods of sustained high rates of fire. Production is expected to begin in 2008.

LightSpeed, a new communications system, uses infrared light to transmit digital voice, video and data signals from one pair of binoculars to another. Initial applications focus on vessel boarding search and seizure communications to pass biometric data back to the ship, as well as ship communications during "radio blackout" situations.

LightSpeed is also being considered for submarine communications with aircraft; explosive ordnance disposal communications; unassisted UAV landing/surveillance; for flight deck personnel to assist with asset tracking and communications; and convoy communications. Prototypes attach easily to "Big Eyes" binoculars with a range of five nautical miles.

VirtuSphere is an 8.5-foot diameter sphere that enables immersive, physical training in virtual settings. The meshwork plastic hollow sphere sits atop a set of wheels, which allow unlimited rotation in any direction. Once inside the sphere, the user dons a wireless head-mounted display and can then walk or run in any direction within the virtual environment.

Virtual environments are great for "anytime, anywhere" training. Their benefits include increased training repetitions, scenario diversity, lower costs, fewer logistical hurdles and increased safety. VirtuSphere provides an accurate experience of the physical fatigue associated with moving through a combat scenario.

SpeechGear is a suite of language transmission software to assist Marines and Soldiers in communicating with allies or adversaries. The software instantly translates everything a person sees, hears, says, reads, writes or types.

SpeechGear's Endurance Tablet PC is a rugged portable system built to withstand all weather conditions. Its high-resolution display is viewable in all lighting conditions, from bright sunlight to total darkness. Its multi-element noise-canceling directional microphone array and four-speaker audio system eliminate the need for a headset. The system is currently being evaluated by front-line troops in Iraq.

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